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**DUPONT TECHNICAL ASSESSMENT ON
U.S. ARMY NEWPORT (INDIANA) PROJECT**

EXECUTIVE SUMMARY

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Wilmington, Delaware 19898
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March 3, 2004

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TRANSPORTATION SAFETY ASSESSMENT AND RISK MANAGEMENT PLAN

Statement of Purpose

DuPont has performed a thorough transportation safety assessment, considering these critical transportation factors:

1. Hazards of the wastewater material
2. Design requirements of the transportation equipment
3. Features of various transportation route
4. Transportation risks

There would be no transportation of VX nerve agent. If the Army awards the contract to DuPont, wastewater (Newport Caustic Hydrolysate, or NCH) will be transported from Newport, Indiana, to the DuPont SET facility in Deepwater, New Jersey. The NCH wastewater will be certified as having no detectable levels of nerve agent present, using the state of the art analytical techniques.

Methodology

This transportation safety assessment was consistent with existing methodologies developed or used by various government agencies, including the U.S. Department of Transportation's Risk Management Self-Evaluation Framework (RMSEF), and the Guidelines for Chemical Transportation Risk Analysis published by the Center for Chemical Process Safety.

VRiskMap, a commercially available Geographic Information System offered by Visual Risk Technologies (Nashville, TN), was used in the evaluation of various transportation route options.

Key Findings

- The wastewater (NCH) does not pose any unique or new concerns in transportation. NCH is a medium-hazard material, defined as Corrosive, Packing Group II, by the U.S. Department of Transportation (DOT). Several household products, including drain and oven cleaners, are classified similarly (or at a higher hazard level).
- The transportation equipment to be used for this project meet or exceed DOT requirements.
 - Tank trucks are built to the American Society of Mechanical Engineers (ASME) standards and have a higher Maximum Allowable Working Pressure (MAWP) than required by DOT. This means that they are more robust than is required, having a thicker wall on the container, which would provide additional protection during an accident.
 - DOT specifies many important features of the tanks, including material of construction, thickness of material, pressure relief systems, emergency valve shut-off, and accident damage protection for valves and other fittings. The tanks to be used for transportation meet or exceed these requirements.
- All transportation options have equivalent and low chances of accident or release.
 - Less than one accident and significantly less than one release would be statistically predicted with loaded tank trucks over the *entire* project. There is roughly a 1 in 3,000 chance of a truck accident per trip or a 1 in 13,000 chance of a release of product per trip.
- The transportation of NCH poses only a moderate hazard to emergency responders and other persons in the immediate vicinity of the spill (range of 30-50 yards), and is very unlikely to have wide-reaching effects on population or the environment. Overall, the potential consequences from a spill are low and do not differ from other potential spills of other commercially transported, corrosive materials.

Conclusions

- The wastewater being transported for this project does not pose any unique or new concerns in transportation. The risks along all of the identified routes are very low to populations, employees, emergency response personnel, and the environment due to transport of NCH. (see Figures 1 and 2)

- The routes, carriers, and transportation equipment were carefully selected to even further reduce that risk, and result in a very low chance of an accident or a release of material.
- In order to further assure safe shipment of the material, DuPont's risk management plan includes:
 - Thorough safety qualification of carriers and selection of the best in industry, qualifications which must be maintained over the entire shipping campaign
 - Dedicated fleet of drivers and equipment for transportation
 - Team drivers to reduce transit time and layover, and provide added security
 - Global Positioning Systems (GPS) in every truck for communication and security
 - Late-model, high-quality equipment
 - Speed governors to restrict maximum travel speed
 - Trailers built to ASME boiler code standards

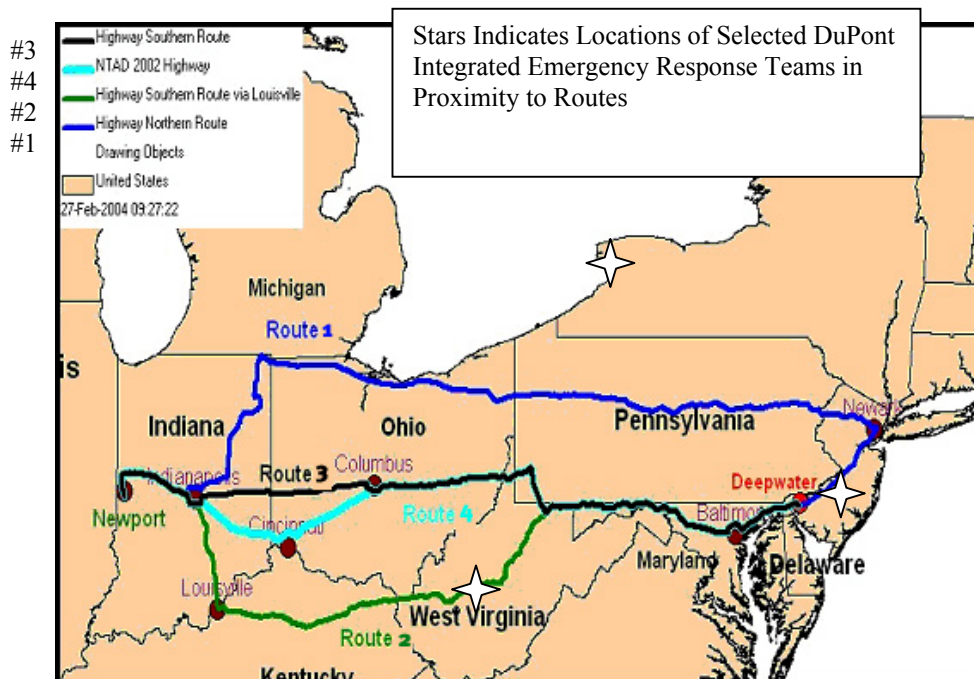
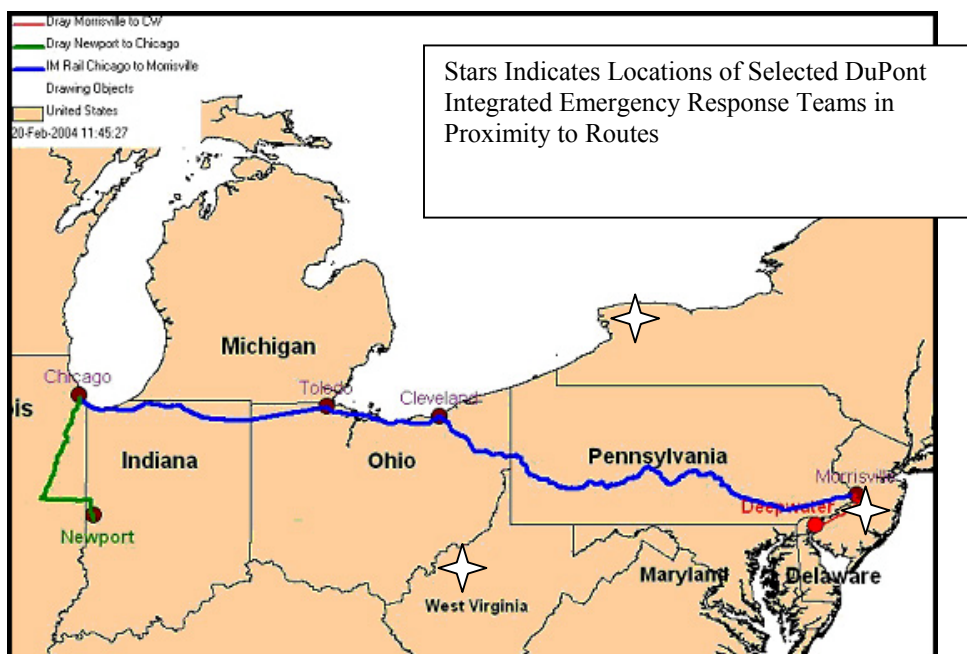
DuPont's Preferred Route

The identified preferred route, (No. 1 in the chart below):

- utilizes the most interstate highways – enhancing its statistical safety ratio
- minimizes travel over waterways – enhancing the water “exposure” metric
- is the most efficient in coordinating emergency response capabilities among DuPont responders and appropriate state and local responders

In the event of weather, traffic or other issues affecting the preferred route, an alternative route has been identified (No. 2 in the chart below) based on several comparable criteria.

Public comments and input on the transportation routes are available as part of the current public comment process and at the upcoming public information sessions.

Figure 1: Map of Four Potential Highway Routes**Figure 2: Map of Potential Highway-Rail Intermodal Route (#5)**

TREATABILITY STUDY

Statement of Purpose

The objective of this study was to determine if the SET Wastewater Treatment Plant (WWTP) at the Chambers Works site (Deepwater, NJ) could effectively treat Newport (Indiana) Caustic Hydrolysate (NCH) at the U.S. Army's anticipated generation rate. Currently, the SET facility treats approximately 15 million gallons of wastewater per day. The approximate production rate of NCH is anticipated to be one to two truckloads (a total of 3,000 to 7,000 gallons) per day.

The study evaluated both pretreatment through chemical oxidation as well as biotreatment utilizing the patented PACT[®] process (Powdered Activated Carbon Treatment with activated sludge).

In the study, three general criteria for the effective treatment of NCH were used:

- Ability to meet SET WWTP operational requirements
- Ability to maintain control of wastewater and sludge odors
- Ability to assure permit compliance

Methodology

Pretreatment by chemical oxidation was conducted to evaluate dosages and operating conditions. A biotreatability study was conducted using continuously fed Eckenfelder-type PACT[®] bioreactors.

Over the history of the SET WWTP, DuPont has demonstrated the suitability of this scale of testing to screen wastewaters for acceptance. Eckenfelder-type reactors have been used by DuPont to design several of its wastewater treatment systems currently in operation. The bioreactors were operated to simulate the conditions at the WWTP using actual wastewater and activated sludge under plant process conditions. Several wastewater parameters were monitored in the influent and effluent to each bioreactor including dissolved organic carbon (DOC), biochemical oxygen demand (BOD), chemical oxygen demand (COD), ethyl methyl-phosphonic acid (EMPA), methylphosphonic acid (MPA), and other parameters. Reactor conditions such as pH, temperature and mixed liquor suspended solids (MLSS) were monitored and controlled at levels similar to those maintained in the full-scale SET WWTP.

Key Findings

Key findings of the treatability study include:

- The DuPont WWTP can effectively treat the stated volume (3,000 to 7,000 gallons per day) of NCH generated at the Newport (Indiana) site. In addition, the bioreactor system operated within normal SET WWTP operating conditions at a NCH production rate of up to 10,000 gallons per day.
- Pretreatment by chemical oxidation was effective in odor control. Odor intensity results were indistinguishable between the wastewater and sludge in the control and those from the test streams.
- Chemical oxidation pretreatment destroys the thiolamine, but has limited effect on EMPA and MPA. Biotreatment will convert a substantial portion of EMPA to MPA while overall treatment of MPA will be limited. EMPA and MPA at the estimated levels are not toxic to aquatic organisms in the Delaware River and Estuary.
- Following biotreatment at the WWTP, no other organic components or degradation products of the NCH were identified in the bioreactor effluent.
- Solid residues generated from the treatment of NCH will be placed in DuPont's on-site RCRA permitted subtitle "C" landfill, not in public landfills
- The study demonstrated that key permit parameters such as BOD₅, percent BOD removal and Whole Effluent Toxicity for the WWTP would be met during the treatment of the NCH.
- Modeling of the physical parameters indicates that no atmospheric emissions of MPA, EMPA or thiolamine would result from the treatment of NCH.

Conclusions

This treatability study conclusively demonstrates that all three major success criteria can be met and the SET WWTP can safely and effectively treat the NCH.

SCREENING LEVEL ENVIRONMENTAL RISK ASSESSMENT

Statement of Purpose

The objective of this review is a screening level environmental risk assessment for the effluent discharge to the Delaware River and Estuary resulting from the waste treatment of Newport (Indiana) Caustic Hydrolysate (NCH) by the DuPont Secure Environmental Treatment (SET) wastewater treatment plant (WWTP) located at Deepwater, New Jersey. This assessment evaluated the environmental exposure pathways and screening level risk to ecological receptor species in the Delaware River and Estuary.

Methodology

U.S. EPA risk assessment guidance was used in the development of this assessment (U.S. EPA 1997). Screening level exposure and hazard characterizations were developed for EMPA and MPA, the principal constituents of the SET WWTP effluent that result from the treatment of NCH. These exposure and hazard characterization data were then used to develop risk quotients that were evaluated to assess risk to the receptor species.

The following information was considered in this process:

- Physical/chemical properties of EMPA and MPA
- Estimated effluent concentrations for EMPA and MPA from the study of NCH treatability (Reich et al. 2004)
- Physical mixing properties for the SET WWTP effluent discharge in the Delaware River
- Experimental and modeled aquatic toxicity data for EMPA and MPA using representative, sensitive aquatic species

Findings

- The primary environmental exposure pathway for MPA and EMPA is surface water. Based on their physical-chemical properties, EMPA and MPA are not volatile (no airborne exposure) and do not bioaccumulate (do not build up in organisms or the food chain).
- Phosphonic acids are present in the environment from naturally occurring and industrial sources.

- EMPA and MPA at anticipated discharge concentrations are not toxic to aquatic organisms in the Delaware River and Estuary.
- In surface water, EMPA will naturally biodegrade into MPA and ethanol. The low levels of ethanol released will be used as a food source by microorganisms and will not pose a hazard to the environment.
- Biological processes will eventually biodegrade MPA to inorganic phosphate and methane.
- Based on the low concentrations of MPA and the limited bioavailability of its phosphorus content, no significant addition of phosphorus will occur in the estuary. Any utilization of the phosphorus in MPA as a nutrient for plant growth is likely to occur in phosphorus-limited areas of the open ocean.

Conclusion

The screening level risk assessment indicates that discharge of effluent from the treatment of NCH by the SET WWTP will have no adverse effect on the environment.

TOXICOLOGY ASSESSMENT OF HEALTH HAZARDS

Statement of Purpose

A toxicology assessment was conducted to evaluate the potential human health hazards and risk relevant to transportation of NCH from Newport, Indiana to Deepwater, New Jersey and subsequent treatment at the DuPont Secure Environmental Treatment (SET) wastewater treatment plant (WWTP) located at Deepwater, New Jersey.

Methodology

The wastewater (NCH) is a water-based mixture containing 80% water and the following compounds: diisopropylamino ethylthiolate (thiolamine), sodium ethyl methylphosphonate, sodium hydroxide, sodium methyl phosphonate, ethanol, diisopropylamino ethyl disulfide and diisopropylamine.

All currently available information on the NCH mixture physical properties, exposure scenarios, toxicity and regulatory standards were evaluated and used to assess the human health hazard/risk potential of NCH during transportation. The NCH toxicological assessment was conducted on the complete NCH mixture.

One of the NCH components, thiolamine, is in the mercaptan chemical family and has an odor, which can be detected at very low concentrations. However, thiolamine will be completely destroyed during treatment at the SET facility. A toxicological assessment was conducted for the residual methylphosphonic acid (MPA) and ethyl methylphosphonic acid (EMPA) expected to remain following NCH treatment at the SET facility.

Additional toxicity testing and modeling were conducted to complement the available information in the MPA and EMPA toxicity databases. The assessment included the following activities.

- Reviewed U.S. Army reports related to the composition, chemical and toxicological properties of NCH
- Comprehensively searched Toxline, Medline, Toxnet and Scifinder 2004 databases for toxicity information on NCH components, including MPA and EMPA and similar compounds

- Reviewed the American Industrial Hygiene Association (AIHA) Emergency Response Planning Guides (ERPGs) for sodium hydroxide, the component of NCH which drives the toxicity considerations
- Conducted dermal toxicity tests on NCH required for DOT corrosivity classification
- Conducted predictive toxicity and metabolism modeling of EMPA and MPA using METEOR, DEREK and TOPKAT programs
- Conducted acute oral toxicity tests on MPA and EMPA

Key Findings

- NCH is a water-based liquid with very low vapor pressure. Using DOT definitions, NCH is not a poison or acutely toxic material, but it is considered to be a corrosive material due to the presence of sodium hydroxide (pH 12-14).
- NCH presents no unique physical or chemical hazards as compared to other corrosive sodium hydroxide (lye) waste materials.
- Dermal and eye exposure to NCH liquid and inhalation of NCH droplets are the most relevant exposure considerations for people in the immediate vicinity of a NCH release, such as those involved in emergency response or clean up activities.
- Predictive toxicity models were uninformative, but metabolism modeling indicated that MPA and EMPA are not metabolized in humans.
- Based on acute oral toxicity tests, MPA and EMPA had approximately the same order of acute toxicity as table salt.

Conclusion

An assessment of NCH hazard information led to the conclusion that NCH, although a corrosive mixture, can be safely transported and treated at the DuPont SET facility. Additionally, the toxicity testing, exposure information, predictive modeling and literature searches support the conclusion that MPA and EMPA present a low risk of toxicity to humans.

OVERALL CONCLUSION OF DUPONT TECHNICAL ASSESSMENT ON U.S. ARMY NEWPORT (INDIANA) PROJECT

The four assessments, which were reviewed by several independent scientists including the Virginia Institute of Marine Sciences, Virginia Polytechnic Institute and the U.S. Centers for Disease Control and Prevention – conclude that the wastewater from the U.S. Army's Newport, Indiana site can be safely transported, managed as a corrosive material, effectively treated at the DuPont SET facility and disposed of under permits with both U.S. EPA and the New Jersey Department of Environmental Protection without adverse impact on the environment.



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**TOXICOLOGY ASSESSMENT OF HEALTH HAZARD
CONSIDERATIONS
FOR SAFE MANAGEMENT OF NEWPORT (INDIANA)
CAUSTIC HYDROLYSATE (NCH)**

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March 3, 2004

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Work Request Number
14191

Service Code Number
1243

Report number
DuPont-14523

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SUMMARY

The assessment of potential Newport (Indiana) Caustic Hydrolysate (NCH)-related health risk was conducted as part of a program feasibility effort. More specifically, exposure potential, NCH chemical properties and health hazard information were evaluated to support decisions related to the safe NCH transport and subsequent treatment of NCH at the DuPont Secure Environmental Treatment (SET) facility. Therefore, one area of focus was NCH as it is received and transported and the other was the methylphosphonic acid (MPA) and ethyl methylphosphonic acid (EMPA) remaining in the SET facility effluent.

NCH mixture composition and physical property information were available and adequate for the purposes of identifying human exposure routes relevant to the inadvertent release of NCH. Toxicology studies conducted by the U.S. Army demonstrated that NCH is not a poison or a toxic compound, based on Department of Transportation (DOT) classification, however, these studies did illustrate that NCH is corrosive. In order to support safe transportation practices and appropriate safety labeling, DuPont conducted further corrosion studies and determined that NCH is a moderate corrosion hazard. Limited acute mammalian toxicity information was available on the NCH post-treatment products, MPA and EMPA. Predictive toxicity modeling was generally uninformative, but metabolism models predicted MPA and EMPA to be metabolically inert in mammals. DuPont conducted acute oral toxicity (lethality) tests on both MPA and EMPA and demonstrated that both of these compounds are of low acute toxicity (lethality), similar to that of table salt.

An assessment of NCH hazard and exposure information led to the conclusion that NCH, a corrosive and potentially odorous mixture, can be safely transported and treated at the DuPont SET facility. Further, the toxicity testing, exposure information, predictive modeling and literature searches support the conclusion that MPA, EMPA, and the NCH post-treatment products, present a low risk of toxicity to humans.

INTRODUCTION

This assessment of potential Newport (Indiana) Caustic Hydrolysate (NCH) related health risk was conducted as part of a program feasibility effort. More specifically, exposure potential, NCH chemical properties and health hazard information were evaluated to support decisions related to the safe NCH transport and subsequent treatment of NCH at the DuPont Secure Environmental Treatment (SET) facility. The assessment consisted of

multiple steps, with the first being a thorough search and review of existing NCH toxicity/hazard information. Existing toxicity information was further assessed within the context of realistic NCH exposure scenarios. While NCH health risk assessment during transport was focused on the properties of NCH as a complete mixture, ethyl methylphosphonic acid (EMPA) and methylphosphonic acid (MPA) became the focus following NCH treatment at the SET. The focus shift is due to the fact that EMPA and MPA are expected to be components of the SET facility effluent. As with NCH, a thorough literature search and review of EMPA and MPA toxicity/hazard information was used within the context of realistic exposure scenarios to determine the adequacy of the toxicity database. Predictive toxicity modeling applications were also used to identify likely toxicity or health hazards associated with exposure to EMPA and MPA. Where appropriate, new toxicity/hazard data were generated to fill knowledge gaps and support science-based decisions relevant to the safe pre- and post-treatment of NCH.

NCH COMPOSITION/PROPERTIES

NCH contains approximately 80% water with minor amounts of sodium hydroxide (lye, CAS#1310-73-2), diisopropylamino ethylthiolate (thiolamine, CAS# 5842-07-9), and the sodium salts of ethyl methylphosphonic acid (EMPA, CAS#1832-53-7) and methylphosphonic acid (MPA, CAS#993-13-5). Approximately 1% is comprised of other compounds (ethanol [CAS#64-17-5], diisopropylamino ethyl disulfide [CAS#65332-44-7] and diisopropylamine [CAS#108-18-9]). The mixture has very low vapor pressure, is yellow in color, has a pH in the range of 12-14 and possesses an offensive, sulfur-like odor. The sulfur-like odor is reportedly due to the presence of thiolamine, which is a member of the mercaptan family of chemicals. Phase separation may occur depending on the storage conditions and proportion of organic components in the mixture.

EXPOSURE CONSIDERATIONS FOR NCH

It is highly unlikely that any members of the general population would come into contact with NCH. However, as a matter of due diligence, possible short-term exposure effects were considered in the context of an unlikely transportation related release of NCH. Dermal and eye exposure to NCH liquid and inhalation of NCH droplets (aerosol) are the most relevant exposure considerations for people in close proximity to a NCH release, such as those involved in emergency response or clean up activities. A NCH component, thiolamine (mercaptan chemical family), may produce vapors with a detectable and offensive odor. Thiolamine has a relatively low vapor pressure (about 30 times less volatile than water), and would therefore tend not to produce high vapor concentrations. Thiolamine could be slowly volatilized from the NCH, and the vapors would then be diluted with air. However, mercaptan odor can be detected at extremely low part

per billion levels, which are well below any concentration that would present a toxicity concern. In addition to the above exposure routes, it would be theoretically possible to consume NCH orally, but there is no reasonable expectation that ingestion (drinking) of NCH would occur as a result of an accidental release of NCH.

TOXICITY CONSIDERATIONS FOR NCH

NCH is a mixture, which in an accidental release would exist predominantly as a liquid due to its very low vapor pressure. The physical properties and toxicity potential vary considerably for individual NCH components, however, it is not reasonable to assume that the behavior of individual components will represent the behavior of the complete NCH mixture. As a consequence, exhaustive toxicity testing of the individual NCH components would be of limited value in understanding the behavior and toxicity of the complete NCH mixture. This limitation is due in large part to the fact that chemical interactions, concentration factors or additive toxicity effects associated with the combined NCH components might not be detected in toxicity tests conducted with individual components. Therefore, the most useful and meaningful toxicity studies are those using the complete NCH mixture.

Based on Department of Transportation (DOT) test procedures, studies were conducted in order to properly classify NCH with respect to toxicity (Manthei, et al., 1999). The results of the test demonstrated that NCH did not qualify as a DOT poison or toxic material and that NCH retained no nerve agent characteristics. However, the tests clearly demonstrated that NCH was corrosive and capable of damaging skin and producing gastrointestinal injury, as would be expected for any common sodium hydroxide solution (Finlay, 2004a; Manthei, et al., 1999).

Severe eye irritation and injury are possible following eye contact with NCH liquid. Breathing NCH liquid droplets (aerosol) would be expected to produce significant irritation to respiratory tissue. The relevant human toxicity/hazard associated with NCH contact is a direct function of the sodium hydroxide present in the mixture. In human volunteers, a 60-minute dermal exposure to 0.03N (0.12%) sodium hydroxide produced redness and swelling of the skin (Malten and Spruit, 1964).

One component of NCH, thiolamine, may slowly volatilize following an inadvertent release of the NCH mixture. In its pure state, thiolamine, is reported to be acutely toxic when injected into laboratory rats (Munro, et al., 1999). However, as a minor component in the NCH mixture and given its low vapor pressure (about 30 times less volatile than water), thiolamine vapors would tend not to accumulate in high airborne concentrations.

Any thiolamine that volatilized from the NCH mixture would be diluted with air and would possibly present an odor nuisance, but not a significant toxicological risk.

Since the NCH health hazards are primarily a function of the presence of sodium hydroxide, it is useful to briefly consider the uses and well-known health hazards/risks of sodium hydroxide. Sodium hydroxide is commonly referred to as caustic soda or lye, and is used in a wide variety of applications including soap production, manufacture of pharmaceuticals and disinfectants, textile finishing processes, paper processing, food processing and refinement, oil drilling operations, and pH control in the water industry. The sodium hydroxide in NCH serves the same fundamental purpose as sodium hydroxide used in the water industry, mainly pH control. Depending on the strength or concentration of sodium hydroxide (lye), contact can be very irritating to the skin, eyes, digestive tract and respiratory tract. To put this in perspective, NCH is composed of about 4% sodium hydroxide (lye). Production of lye soap commonly uses sodium hydroxide concentrations in the range of 12-14% and sodium hydroxide concentrations as high as 100% can be purchased for use as a drain cleaner.

TOXICITY RELATED EMERGENCY RESPONSE GUIDELINES FOR NCH

NCH is a dilute sodium hydroxide water-based solution and exposure to NCH will not result in a “worst case” scenario where the exposure is to undiluted sodium hydroxide. However, the human health effects associated with exposure to undiluted sodium hydroxide are known, and guidelines have been developed to deal with accidental exposures. The American Industrial Hygiene Association (AIHA) has established Emergency Response Planning Guidelines (ERPGs) for sodium hydroxide (AIHA, 2003). The ERPGs are designed to protect the general public from the consequences of a one-hour exposure to airborne sodium hydroxide following an accidental release. Nearly all individuals could be exposed for one-hour to airborne sodium hydroxide concentrations of 5 mg/m³ or less without experiencing a permanent or serious health effect (ERPG-2). Additionally, the AIHA has established an ERPG-3 of 50 mg/m³ for sodium hydroxide. The ERPG-3 is the maximum airborne sodium hydroxide concentration at which nearly all people could be exposed for one-hour without experiencing life-threatening effects. Emergency response guidelines and DOT shipping classifications are already in place to deal with transportation related issues regarding routine transportation of sodium hydroxide solution via highway and rail.

TOXICITY AND EXPOSURE CONSIDERATIONS FOLLOWING FINAL TREATMENT OF NCH

Following treatment of NCH at the wastewater treatment facility, there will be residual amounts of methylphosphonic acid (MPA) and ethyl methylphosphonic acid (EMPA). MPA and EMPA are highly water-soluble and have extremely low vapor pressures. As a result, inhalation will not be a relevant route for human exposure. Since MPA and EMPA will not be discharged into a drinking water source, long-term human ingestion of MPA and EMPA is not a reasonable human exposure scenario. Humans will not consume or have long-term contact with MPA and EMPA resulting from NCH treatment, therefore long-term mammalian toxicity tests were deemed irrelevant. Efforts were made to use Quantitative Structure Activity Relationship (QSAR) models (METEOR, DEREK and TOPKAT) to predict metabolism and additional toxicity endpoints. QSAR modeling did predict that in humans MPA and EMPA would not be metabolized, but beyond that, the models were uninformative for MPA and EMPA (Kemper, 2004a; 2004b). Even though there are no likely or reasonable exposure scenarios that would result in long-term human consumption of significant amounts of MPA and EMPA, short-term exposures were considered. Toxicity tests were conducted on MPA and EMPA to assess their acute (short-term) oral toxicity (lethality) potential. Acutely toxic effects in rats were observed at doses of 2300 mg/kg and 3400 mg/kg for MPA and EMPA, respectively (Finlay, 2004b; Finlay, 2004c). Based on these tests, both MPA and EMPA have relatively low acute oral toxicity, with acute toxicity (lethality) levels occurring at approximately the same dose as would be seen for table salt.

SUMMARY OF HEALTH HAZARD CONSIDERATIONS

NCH is a water-based mixture with very low vapor pressure. NCH was evaluated using DOT toxicity testing approaches designed to classify hazardous waste for safe transport via highway and rail. NCH was not classified as a poison or toxic material, but NCH was classified as a corrosive (moderate hazard) material. An accidental release of NCH could pose a significant skin and eye contact hazard and inhalation of NCH liquid droplets (aerosol) could pose a health hazard to people in close proximity to a release, such as those involved in emergency response or clean up activities. The potential health hazard of NCH is directly related to its corrosive nature and is similar to or less than the hazard associated with the use of lye in private and commercial processes. Following treatment of NCH at the SET facility, the effluent will contain residual MPA and EMPA. MPA and EMPA are highly water-soluble and have extremely low vapor pressures. As a result, inhalation of MPA and EMPA vapors would not be a relevant route for human exposure. Due to the low acute systemic toxicity, accidental exposure to effluent aerosols containing MPA and EMPA would not be expected to result in toxicity. MPA and EMPA will not be

discharged into any drinking water source; therefore, long-term human ingestion of MPA and EMPA is also not a reasonable human exposure scenario. Toxicity tests designed to evaluate the short-term toxicity (lethality) of MPA and EMPA have shown that the toxicity of these compounds is in the same range as table salt.

An assessment of NCH hazard and exposure information led to the conclusion that NCH, a corrosive and potentially odorous mixture, can be safely transported and treated at the DuPont SET facility. Further, the toxicity testing, exposure information, predictive modeling and literature searches support the conclusion that MPA and EMPA present a low risk of toxicity to humans.

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